

REMARKS

Claims 1-22 are presently pending in the application. Reconsideration and allowance of all claims are respectfully requested in view of the following remarks.

The Examiner has again objected to the specification as failing to provide proper antecedent basis for the claimed subject matter, stating that with respect to Claims 11 and 22, the specification and drawings fail to show or recite the diffractive optical element (DOE) being positioned in the back focal plane of the focusing element.

The Applicants respectfully point out to the Examiner that FIG. 3A shows the DOE being positioned in a back focal plane of the focusing element, and that the Examiner's recommended positioning between the lenses L1, L2 is incorrect. Thus, the Examiner's rejection of Claims 11 and 12 should be withdrawn.

Further, the Examiner is respectfully requested to acknowledge receipt of two (2) sheets of Proposed Formal Drawings, which correct "FIG. 3" to --FIG. 3A-- by Replacement Sheet, and which add new --FIG. 3B-- to the present application. The addition of FIG. 3B is to show the DOE without the telescoping lenses L1, L2, as supported by the specification at page 11, para. 0043 to page 12.

In the Office Action, Claims 1-2, 4, 6-9, 12-13, 15 and 17-20 were rejected by the Examiner under 35 U.S.C. §103 as being unpatentable over Neal (U.S. Patent No. 5,939,716), in view of Schütze (U.S. Patent No. 5,689,109). The Examiner has rejected Claims 3 and 14 under 35 U.S.C. §103(a) as being unpatentable over Neal in view of Schütze and further in view of Long (U.S. Patent No. 5,986,781). Claims 5 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Neal in view of Schütze, and further in view of Sasaki et al. (K. Sasaki, M. Koshioka, H. Misawa, N. Kitamura, H. Masuhara, 'Pattern formation and flow control of fine particles by laser-scanning micromanipulation', Opt. Lett., vol. 16, no. 19, October 1, 1991, pp. 1463-1465.). Claims 10 and 21 were rejected under 35 U.S.C.

§103(a) as being unpatentable over Neal in view of Schütze and further in view of Sasaki et al. Finally, Claims 11 and 22, as best understood by the Examiner, were rejected under 35 U.S.C. §103(a) as being unpatentable over Neal in view of Schütze.

For the following reasons, the prior art rejections are respectfully traversed.

The Applicants respectfully submit that neither the individual nor the combination of the Neal and Schütze references teaches or suggests a method for manipulating a plurality of particles by forming and moving a plurality of optical traps, the method comprising: providing at least one laser beam from at least one source; applying the at least one laser beam to diffraction means for simultaneously creating a plurality of separate laser beams from each of the at least one laser beam; establishing an optical gradient for each of the plurality of separate laser beams to form a plurality of separate optical traps for moving (and trapping) the plurality of particles; and performing a manufacturing process which changes the position of at least one of the plurality of particles, as recited in Claims 1 and 12.

Rather, Neal is directed to a method and apparatus for containing a single reflective particle in a single light cage. Specifically, Neal discloses that "(t)he present invention is a method and apparatus for trapping a reflective ... particle without the use of a scanning mirror, multiple light sources, or active feedback control mechanism" (emphasis added). Neal teaches the use of a light beam from "single source 26" (col. 5, line 51), to illuminate an optics system 32 and generate a number of discrete focussed beams using a diffractive element 18, where the set of focussed beams create a "light cage" 10 (see col. 5, lines 50-59). Further, Neal discloses that "at least three focussed beams are required to provide passive stability within the light cage 10, with greater stability being achieved as the number of focussed beams is increased" (see col. 5, lines 63-67). However, only a single particle is trapped within the single light cage 10 formed by the three focussed beams in Neal.

Further, although Schütze discloses generating a plurality of optical traps, the traps

are generated using a plurality of lasers 3, 4, which generate a plurality of beams of different wavelengths, which is contrary to the teachings of Neal. Further, the plurality of beams from the plurality of lasers 3, 4 are not generated using diffraction means, but simply by using a beam splitter 16.

In fact, Neal teaches away from multiple beams forming multiple light cages. Further, assuming *arguendo* that Neal could be adapted to form multiple light cages, Neal teaches that it would require at least three beams per light cage to trap each particle, rather than a single beam for trapping each particle as in the present invention. Schütze does not make up for the deficiencies in Neal, since Schütze does not teach or suggest diffraction means to form the multiple beams, but rather, multiple lasers.

Accordingly, since Neal teaches away from Schütze, there is no motivation to combine the two references to achieve the claimed features of the present invention. The Examiner is reminded that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.” *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). Since Neal specifically teaches away from using multiple light sources, there is no motivation to combine Schütze with Neal in order to achieve the claimed features of the present invention.

Further, the fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Still further,

even if combined, the two references fail to teach or suggest the claimed features of the present invention. Accordingly, the Examiner has not established a *prima facie* case of obviousness.

In contrast to Neal and Schütze, the present invention is directed to using at least one light source to generate at least one laser beam (see page 10, lines 1-3, of the present specification), passing that beam through a diffraction means to simultaneously form a plurality of separate laser beams, and establishing an optical gradient for each of the separate laser beams to form a plurality of separate optical traps for moving and trapping a plurality of particles (see page 9, lines 2-10 of the present specification). These optical traps can be moved separately to move the plurality of particles in the separate traps in different directions if desired (i.e., see page 12, lines 3-11, of the present specification).

Accordingly, the present invention is not obvious over either the individual or the combination of the Neal and Schütze references, and the rejection of Claims 1 and 12 under 35 U.S.C. §103 should be withdrawn.

The Examiner has rejected Claims 3 and 14 under 35 U.S.C. §103(a) as being unpatentable over Neal and Schütze in view of Long (U.S. Patent No. 5,986,781).

With respect to Claims 3 and 14, the addition of the Long reference does not make up for the deficiencies in Neal and Schütze.

Accordingly, Claims 3 and 14 are patentable over either the individual or the combination of the Neal, Schütze, and Long references, and the rejection of Claims 3 and 14 under 35 U.S.C. §103 should be withdrawn.

Claims 5 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Neal and Schütze in view of Sasaki et al.

The addition of the Sasaki et al. reference does not make up for the deficiencies in Neal and Schütze.

Accordingly, Claims 5 and 16 are not obvious over either the individual or the combination of the Neal, Schütze, and Sasaki et al. references, and the rejection of Claims 5 and 16 under 35 U.S.C. §103 should be withdrawn.

Claims 10 and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Neal and Schütze in view of Sasaki et al.

The Applicants' respectfully submit that one of ordinary skill in the art would not have combined the Neal, Schütze, and Sasaki et al. references, since Schütze is silent with respect to this feature, and Neal clearly teaches away from the use of scanning mirrors (see col. 5, lines 43-46), on which the Examiner relies in Sasaki et al. for use in combination with Neal.

Accordingly, Claims 10 and 21 are not obvious over either the individual or the combination of the Neal, Schütze, and Sasaki et al. references, and the rejection of Claims 10 and 21 under 35 U.S.C. §103 should be withdrawn.

Finally, the Examiner has rejected Claims 11 and 22 under 35 U.S.C. §103(a) as being unpatentable over Neal and Schütze.

Since Claims 2-11 depend from Claim 1, and Claims 13-22 depend from Claim 12, they are also patentably distinguishable over Neal and Schütze for the reasons cited above with respect to Claims 1 and 12.

If the Examiner believes that there is any issue which could be resolved by a telephone or personal interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such an extension is to be charged to Deposit Account No. 04-1061.

Respectfully submitted,

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IN THE DRAWINGS:

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